

CLAIMS

What is claimed is:

1. A method, comprising:
identifying a conductor that is coupled to a device;
extracting information regarding the relationship between the conductor coupled to the device and adjacent conductors;
extracting information regarding a plurality of signals that are present in the adjacent conductors;
partitioning the information into phases;
calculating a voltage induced in the conductor coupled to the device during each phase;
calculating an average voltage induced in the conductor coupled to the device; and
flagging the device if the average voltage induced is above a predetermined threshold.
2. The method of claim 1, wherein information is extracted from a design database.
3. The method of claim 1, wherein partitioning the information into phases further comprises associating a weighting factor to each phase.
4. The method of claim 3, wherein associating a weighting factor to each phase further comprises associating a 1 with a low-to-high transition and a 0 with a non-changing transition.
5. The method of claim 4, wherein a high-to-low transition is associated with a predetermined weighting factor.
6. The method of claim 5, wherein the predetermined weighting factor is negative.

7. The method of claim 6, wherein a default value for the predetermined weighting factor is 0.
8. The method of claim 3, wherein calculating the voltage induced in the conductor comprises iteratively adding the weighting factors due to each phase.
9. The method of claim 8, wherein the number of iterative additions is related to the number of phases.
10. The method of claim 9, wherein the plurality of signals are partitioned according to a smallest period among the signals.
11. The method of claim 8, wherein calculating the voltage induced in the conductor comprises determining a non-weighted factor that is related to the relationship between the conductor coupled to the device and the adjacent conductors.
12. The method of claim 11, wherein the non-weighted factor is related to a capacitance between adjacent conductors.
13. The method of claim 11, wherein the weighted factor is related to a frequency of the signals in the adjacent conductors.
14. The method of claim 11, wherein the average voltage is related to an amount of voltage induced during each phase and the device's fabrication parameters of the device.
15. The method of claim 14, wherein the device comprises an N-type metal oxide semiconductor field effect transistor (MOSFET) and the fabrication parameters comprise electron mobility.

16. The method of claim 11, wherein the weighting factors are added and the sum of the weighting factors is multiplied times the non-weighted factor.
17. The method of claim 1, wherein the device comprises a dielectric material, and flagging the device indicates probable failure of the dielectric material.
18. The method of claim 8, wherein the predetermined threshold is related to a time dependent dielectric breakdown (TDDB) of the device.
19. The method of claim 9, wherein the flagging of devices aids in designing integrated circuits.
20. A method, comprising:
identifying a device;
extracting information regarding the device from a database;
partitioning the extracted information into phases;
determining a weighted coupling contribution;
determining a non-weighted coupling contribution; and
calculating a voltage induced during each phase, wherein the voltage induced is determined using the weighted and non-weighted coupling contributions.
21. The method of claim 11, wherein the device comprises a dielectric and the device is coupled to a first conductor.
22. The method of claim 11, further comprising calculating the average voltage induced due to all the phases, wherein the average voltage induced due to all phases is related to the fabrication parameters of the device as well as an amount of voltage induced during each phase.
23. The method of claim 22, further comprising comparing the average voltage induced to a predetermined threshold.

24. The method of claim 23, further comprising flagging the device if the average voltage induced is greater than a predetermined threshold.